IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended): An [[A]] apparatus for processing image, said apparatus comprising:

motion vector detection means for detecting a motion vector by using an image that is made up of multiple pixels and acquired by an image sensor having time integration effects;

time resolution creation means for generating an image that has a higher time resolution than that of the image made up of the multiple pixels by using the motion vector detected by the motion vector detection means and the image made up of the multiple pixels; and

motion-blurring-mitigated image generation means for generating a motion-blurring-mitigated image in which motion blurring of a moving object is mitigated by using the motion vector detected by the motion vector detection means on the assumption that a pixel value of pixel of the moving object in the image is a value obtained by integrating, in a time direction, a pixel value of each pixel in which no motion blurring that corresponds to the moving object occur as it is moved.

Claim 2 (Original): The apparatus for processing the image according to claim 1, wherein the motion vector detection means detects a motion vector by using multiple images, each of which is made up of multiple pixels, acquired by the image sensor and, based on the detected motion vector, generates a motion vector for the image having the higher time resolution to supply this motion vector to the time resolution creation means.

Claim 3 (Original): The apparatus for processing the image according to claim 1, wherein the motion vector detection means detects a motion vector by using multiple images,

each of which is made up of multiple pixels, acquired by the image sensor, corrects the detected motion vector in accordance with exposure lapse of time, and supplies it to the motion-blurring-mitigated image generation means.

Claim 4 (Original): The apparatus for processing the image according to claim 1, wherein the time resolution creation means uses the motion-blurring-mitigated image to generate an image having a higher time resolution than that of the motion-blurring-mitigated image.

Claim 5 (Original): The apparatus for processing the image according to claim 4, wherein the time resolution creation means comprises:

class determination means for determining a motion vector of a target pixel in the image, to be created, with the higher time resolution, by using the motion vector detected by the motion vector detection means, extracting as a class tap multiple pixels that correspond to the target pixel from the motion-blurring-mitigated image, and determining a class that corresponds to the target pixel based on a pixel value of the class tap;

storage means for learning prediction coefficients each for predicting a target pixel based on multiple pixels in a first image for each class between the first image and a second image, said first image having a time resolution that corresponds to the motion-blurring-mitigated image, said second image having a higher time resolution than that of the first image, said multiple pixels in the first image corresponding to the target pixel in the second image, to store the generated prediction coefficients for each class; and

prediction value generation means for detecting from the storage means a prediction coefficient that corresponds to a class determined by the class determination means, extracting as a prediction tap multiple pixels that correspond to the target pixel in the image

to be generated from the motion-blurring-mitigated image, and generating a predictive value corresponding to the target pixel according to one-dimensional linear combination of the predictive coefficients detected from the storage means and the predictive tap.

Claim 6 (Currently Amended): A method for processing an image, said method comprising:

~~motion vector detection step of~~ detecting a motion vector by using an image made up of multiple pixels acquired by an image sensor having time integration effects;

~~time resolution creation step of~~ generating an image that has a higher time resolution than that of the image made up of the multiple pixels by using the motion vector detected in the detecting ~~motion vector detection step~~ and the image made up of the multiple pixels; and

~~motion-blurring-mitigated image generation step of~~ generating a motion-blurring-mitigated image in which motion blurring of a moving object is mitigated by using the motion vector detected in the detecting ~~motion vector detection step~~ on the assumption that a pixel value of pixel of the moving object in the image is a value obtained by integrating, in a time direction, a pixel value of each pixel in which no motion blurring that corresponds to the moving object occur as it is moved.

Claim 7 (Currently Amended): The method for processing the image according to claim 6, wherein in the detecting ~~motion vector detection step~~, a motion vector by using multiple images, each of which is made up of multiple pixels, acquired by the image sensor is detected and, based on the detected motion vector, a motion vector for the image having the higher time resolution is generated and supplied to the generating an image ~~time resolution creation step~~.

Claim 8 (Currently Amended): The method for processing the image according to claim 6, wherein in the detecting ~~motion vector detection step~~, a motion vector is detected by using multiple images, each of which is made up of multiple pixels, acquired by the image sensor, and the detected motion vector is corrected in accordance with exposure lapse of time and supplied to the generating a motion-blurring-mitigated image ~~motion-blurring-mitigated image generation step~~.

Claim 9 (Currently Amended): The method for processing the image according to claim 6, wherein in the generating an image ~~time resolution creation step~~, the motion-blurring-mitigated image is used to generate an image having a higher time resolution than that of the motion-blurring-mitigated image.

Claim 10 (Currently Amended): The method for processing the image according to claim 9, wherein the generating an image ~~time resolution creation step~~ comprises:

~~class determination step of~~ determining a motion vector of a target pixel in the image, to be created, with the higher time resolution, by using the motion vector detected in the detecting ~~motion vector detection step~~, extracting as a class tap multiple pixels that correspond to the target pixel from the motion-blurring-mitigated image, and determining a class that corresponds to the target pixel based on a pixel value of the class tap;

~~storage step of~~ learning prediction coefficients each for predicting a target pixel based on multiple pixels in a first image for each class between the first image and a second image, said first image having a time resolution that corresponds to the motion-blurring-mitigated image, said second image having a higher time resolution than that of the first image, said multiple pixels in the first image corresponding to the target pixel in the second image, to store the generated prediction coefficients for each class; and

~~prediction value generation step of~~ detecting from the learning ~~storage step~~ a prediction coefficient that corresponds to a class determined by the determining a motion vector ~~class determination step~~, extracting as a prediction tap multiple pixels that correspond to the target pixel in the image to be generated from the motion-blurring-mitigated image, and generating a predictive value corresponding to the target pixel according to one-dimensional linear combination of the predictive coefficients detected from the learning ~~storage step~~ and the predictive tap.

Claim 11 (Currently Amended): A computer readable medium including computer executable instructions, wherein the instructions, when executed by a processor, cause the processor to perform a method comprising ~~program allowing a computer to perform~~:

~~motion vector detection step of~~ detecting a motion vector by using an image made up of multiple pixels acquired by an image sensor having time integration effects;

~~time resolution creation step of~~ generating an image that has a higher time resolution than that of the image made up of the multiple pixels by using the motion vector detected in the detecting ~~motion vector detection step~~ and the image made up of the multiple pixels; and

~~motion blurring mitigated image generation step of~~ generating a motion-blurring-mitigated image in which motion blurring of a moving object is mitigated by using the motion vector detected in the detecting ~~motion vector detection step~~ on the assumption that a pixel value of pixel of the moving object in the image is a value obtained by integrating, in a time direction, a pixel value of each pixel in which no motion blurring that corresponds to the moving object occur as it is moved.

Claim 12 (New): An apparatus for processing image, said apparatus comprising:

a motion vector detector configured to detect a motion vector by using an image that is made up of multiple pixels and acquired by an image sensor having time integration effects;

a time resolution creation unit configured to generate an image that has a higher time resolution than that of the image made up of the multiple pixels by using the motion vector detected by the motion vector detector and the image made up of the multiple pixels; and

a motion-blurring-mitigated image generator configured to generate a motion-blurring-mitigated image in which motion blurring of a moving object is mitigated by using the motion vector detected by the motion vector detector on the assumption that a pixel value of pixel of the moving object in the image is a value obtained by integrating, in a time direction, a pixel value of each pixel in which no motion blurring that corresponds to the moving object occur as it is moved.

Claim 13 (New): The apparatus for processing the image according to claim 12, wherein the motion vector detector is configured to detect a motion vector by using multiple images, each of which is made up of multiple pixels, acquired by the image sensor and, based on the detected motion vector, to generate a motion vector for the image having the higher time resolution to supply this motion vector to the time resolution creation unit.

Claim 14 (New): The apparatus for processing the image according to claim 12, wherein the motion vector detector is configured to detect a motion vector by using multiple images, each of which is made up of multiple pixels, acquired by the image sensor, to correct the detected motion vector in accordance with exposure lapse of time, and to supply it to the motion-blurring-mitigated image generator.

Claim 15 (New): The apparatus for processing the image according to claim 12, wherein the time resolution creation unit is configured to use the motion-blurring-mitigated image to generate an image having a higher time resolution than that of the motion-blurring-mitigated image.

Claim 16 (New): The apparatus for processing the image according to claim 15, wherein the time resolution creation unit comprises:

a class determination unit configured to determine a motion vector of a target pixel in the image, to be created, with the higher time resolution, by using the motion vector detected by the motion vector detector, to extract as a class tap multiple pixels that correspond to the target pixel from the motion-blurring-mitigated image, and to determine a class that corresponds to the target pixel based on a pixel value of the class tap;

a storage unit configured to learn prediction coefficients each for predicting a target pixel based on multiple pixels in a first image for each class between the first image and a second image, said first image having a time resolution that corresponds to the motion-blurring-mitigated image, said second image having a higher time resolution than that of the first image, said multiple pixels in the first image corresponding to the target pixel in the second image, to store the generated prediction coefficients for each class; and

a prediction value generator configured to detect from the storage unit a prediction coefficient that corresponds to a class determined by the class determination unit, extracting as a prediction tap multiple pixels that correspond to the target pixel in the image to be generated from the motion-blurring-mitigated image, and generating a predictive value corresponding to the target pixel according to one-dimensional linear combination of the predictive coefficients detected from the storage unit and the predictive tap.